

CLAIMS

1.- Miniaturised relay characterised in that it comprises:

- a first zone facing a second zone,
- 5 - a first condenser plate (3) arranged in said first zone,
- a second condenser plate (9) arranged in said second zone and facing said first condenser plate (3), in which said second plate is smaller than or equal to said first plate,
- an intermediate space (25) arranged between said first zone and  
10 said second zone,
- a conductive element (7) arranged in said intermediate space (25), said conductive element (7) being mechanically independent from said first zone and second zone and being suitable for effecting a movement across said intermediate space (25) from said first zone to said second zone and  
15 vice versa, said depending on voltages present in said first and second condenser plates,
- a first contact point (15) of an electric circuit, a second contact point (17) of said electric circuit, in which said first and second contact points (15, 17) define first stops (13), in which said conductive element (7)  
20 is suitable for entering into contact with said first stops (13) and in which said conductive element (7) closes said electric circuit when in contact with said first stops (13).

2.- Relay according to claim 1, characterised in that said first  
25 contact point (15) is between said second zone and said conductive element (7).

3.- Relay according to one of claims 1 or 2, characterised in that  
said second contact point (17) is likewise in said second zone.

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4.- Relay according to any of claims 1 to 3, characterised in that it comprises, additionally, a third condenser plate (11) arranged in said second zone, in which said third condenser plate (11) is smaller than or

equal to said first condenser plate (3), and in which said second and third condenser plates are, together, larger than said first condenser plate (3).

5 5.- Relay according to one of claims 1 to 3, characterised in that it comprises, additionally, a third condenser plate (11) arranged in said second zone and a fourth condenser plate (5) arranged in said first zone, in which said first condenser plate (3) and said second condenser plate (9) are equal to each other, and said third condenser plate (11) and said fourth condenser plate (5) are equal to each other.

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6.- Relay according to claim 5, characterised in that said first, second, third and fourth condenser plates are all equal to each other.

15 7.- Relay according to one of claims 5 or 6, characterised in that it comprises, additionally, a fifth condenser plate (35) arranged in said first zone and a sixth condenser plate (37) arranged in said second zone, in which said fifth condenser plate (35) and said sixth condenser plate (37) are equal to each other.

20 8.- Relay according to claim 7, characterised in that it comprises, six condenser plates arranged in said first zone and six condenser plates arranged in said second zone.

25 9.- Relay according to any of claims 1 to 8, characterised in that it comprises a second stop between said first zone and said conductive element (7).

30 10.- Relay according to any of claims 1 to 9, characterised in that it comprises a third contact point (21) arranged between said first zone and said conductive element (7), in which said third contact point (21) defines a second stop, such that said conductive element (7) closes a second electric circuit when in contact with said second contact point (17) and said third contact point (21).

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11.- Relay according to claim 10, characterised in that said  
conductive element (7) comprises a hollow cylindrical part (31) which  
defines a axis, in the interior of which is housed said second contact point  
5 (17), and a flat part (33) which protrudes from one side of said radially  
hollow cylindrical part (31) and which extends in the direction of said axis,  
in which said flat part (33) has a height, measured in the direction of said  
axis, which is less than the height of said cylindrical part (33) measured in  
the direction of said axis.

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12.- Relay according to claim 10, characterised in that said  
conductive element (7) comprises a hollow parallelepipedic part which  
defines a axis, in the interior of which is housed said second contact point  
(17), and a flat part (33) which protrudes from one side of said radially  
15 hollow parallelepipedic part (31) and which extends in the direction of said  
axis, in which said flat part (33) has a height, measured in the direction of  
said axis, which is less than the height of said parallelepipedic part,  
measured in the direction of said axis.

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13.- Relay according to any of claims 1 to 8, characterised in that it  
comprises a third contact point (21) and a fourth contact point (23)  
arranged between said first zone and said conductive element (7), in which  
said third contact point (21) and fourth contact point (23) define second  
stops (19), such that said conductive element (7) closes a second electric  
25 circuit when in contact with said third contact point (21) and fourth contact  
point (23).

14.- Relay according to any of claims 1 to 13, characterised in that  
each of the assemblies of said condenser plates arranged in each of said  
30 first and second zones has central symmetry with respect to a centre of  
symmetry, and in which said centre of symmetry is superposed to the  
centre of masses of said conductive element (7).

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15.- Relay according to any of claims 1 to 13, characterised in that the assembly of said condenser plates arranged in each of said first and second zones has central asymmetry, thus generating a moment of forces with respect to the centre of masses of said conductive element (7).

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16.- Relay according to any of claims 13 to 15, characterised in that between said first zone and said second zone extend two lateral walls (29), in which there is play between said lateral walls (29) and said conductive element (7), said play being sufficiently small so as to geometrically prevent said conductive element (7) from simultaneously entering into contact with a contact point of the group formed by said first and second contact points (15, 17) and with a contact point of the group formed by said third and fourth contact points (21, 23).

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17.- Relay according to any of claims 1 to 16, characterised in that said conductive element (7) has rounded external surfaces.

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18.- Relay according to claim 17, characterised in that said conductive element (7) is cylindrical.

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19.- Relay according to claim 17, characterised in that said conductive element (7) is spherical.

20.- Relay according to any of claims 1 to 18, characterised in that said conductive element (7) has an upper face and a lower face, said upper and lower faces being perpendicular to said movement of said conductive element (7), and at least one lateral face, in which said lateral face has slight protuberances.

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21.- Relay according to any of claims 1 to 20, characterised in that said conductive element (7) is hollow.

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22.- Relay according to claim 1, characterised in that said first condenser plate (3) has a surface area which is equal to or double the surface area of said second condenser plate (9).

5           23.- Relay according to any of claims 1 to 22, characterised in that one of said condenser plates (3, 5, 9, 11, 35, 37) is, simultaneously one of said contact points (15, 17, 21, 23).

24.- Use of a relay according to any of claims 1 to 23, as  
10   accelerometer.

25.- Use of a relay according to any of claims 1 to 23, as accelerometer in airbags.

15           26.- Use of a relay according to any of claims 1 to 23, as tiltmeter.

27.- Use of a relay according to any of claims 1 to 23, as detector of Coriolis forces.

20           28.- Use of a relay according to any of claims 1 to 23, as pressure sensor.

29.- Use of a relay according to any of claims 1 to 23, as  
microphone.

25           30.- Use of a relay according to any of claims 1 to 23, as flow sensor.

31.- Use of a relay according to any of claims 1 to 23, as  
30   temperature sensor.

32.- Use of a relay according to any of claims 1 to 23, for acoustic applications.

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33.- Use of a relay according to any of claims 1 to 23, as gas sensor.

5        34.- Use of a relay according to any of claims 1 to 23, as magnetic field sensor.